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Patented Dec. 6, 1898.

F. BURGER & H. M. WILLIAMS.

TELEPHONE..

(Application filed Aug. 16, 1897.)

(No Model.)

2 Sheets--Sheet 1.

Fig. 1.

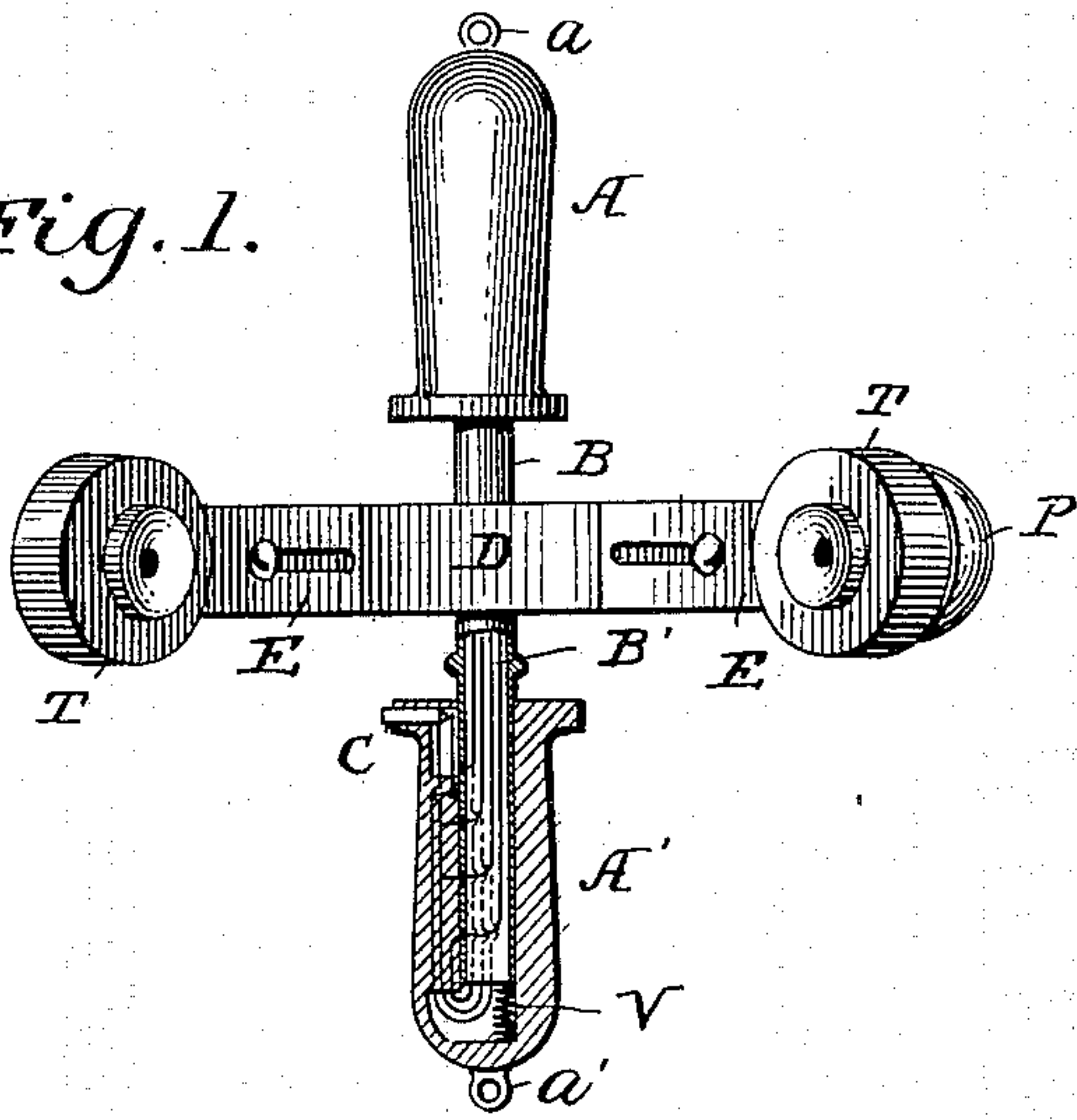
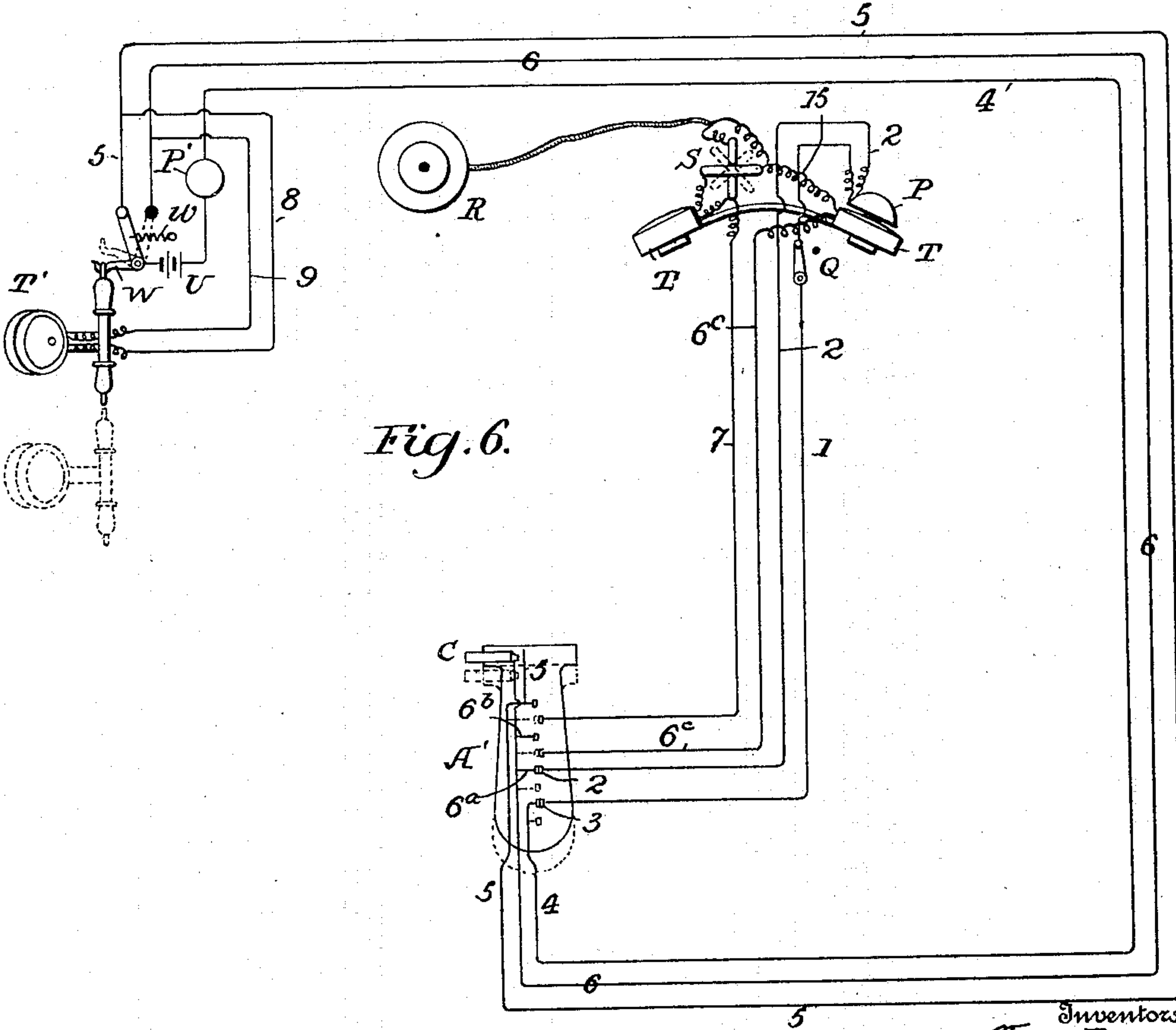


Fig. 6.



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2 Sheets—Sheet 2.

Fig. 2.

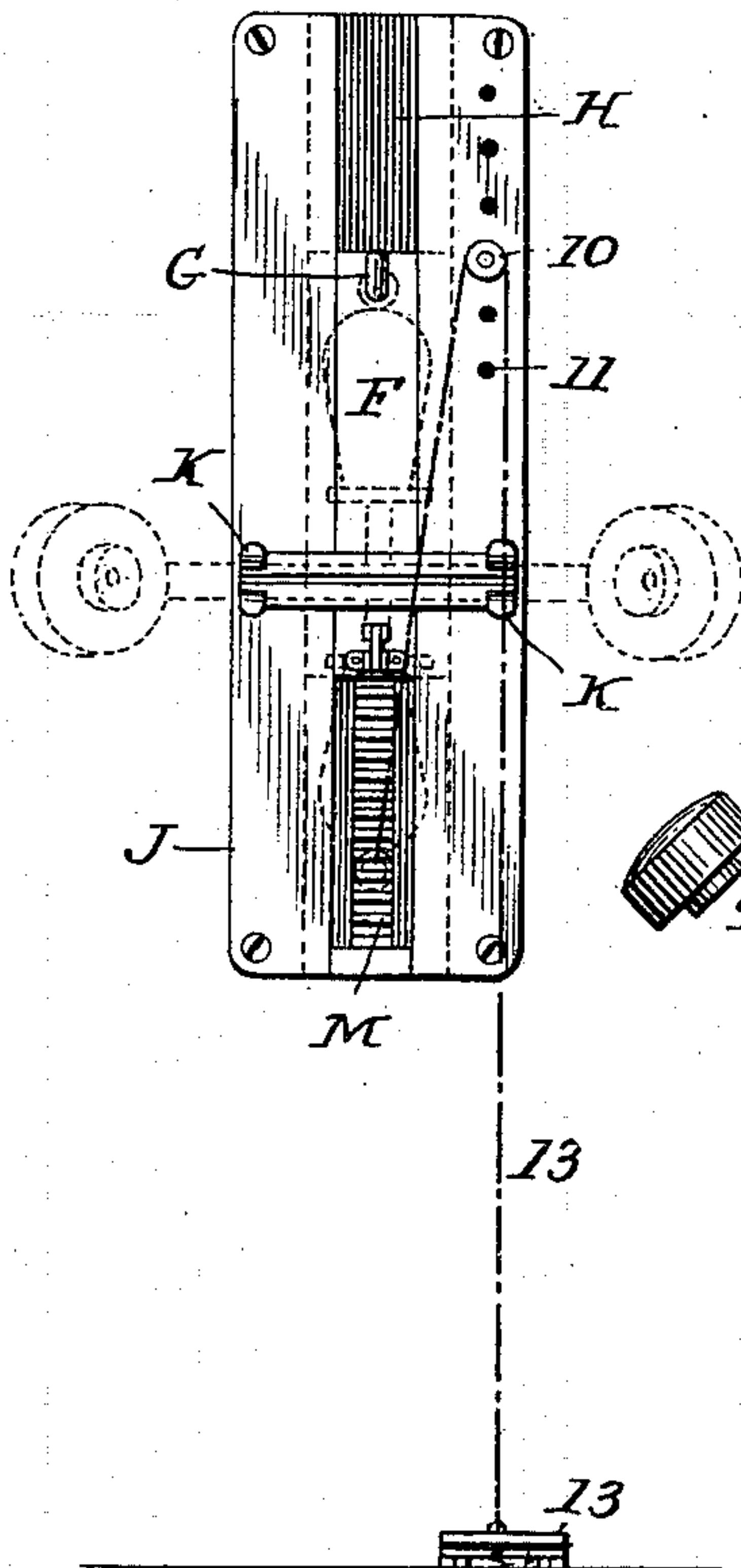


Fig. 4.

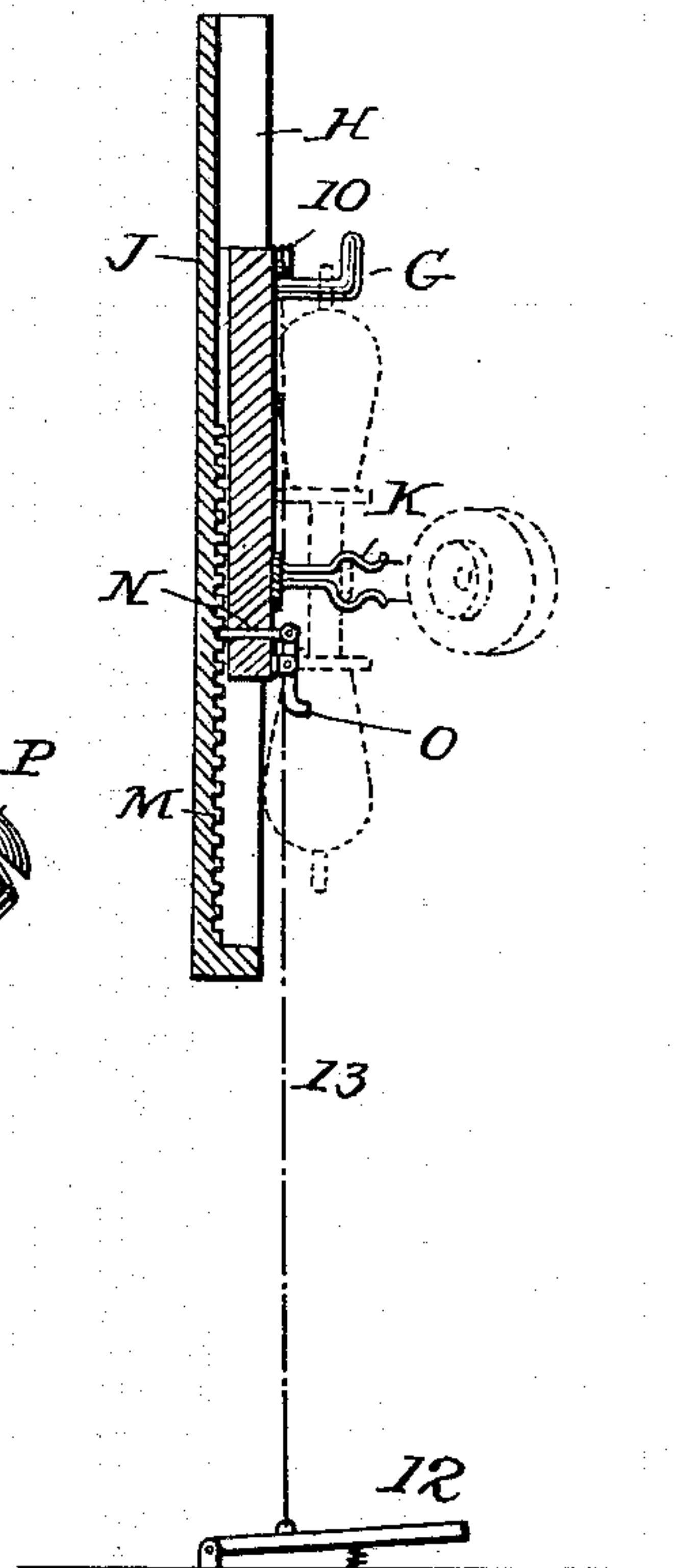


Fig. 3.

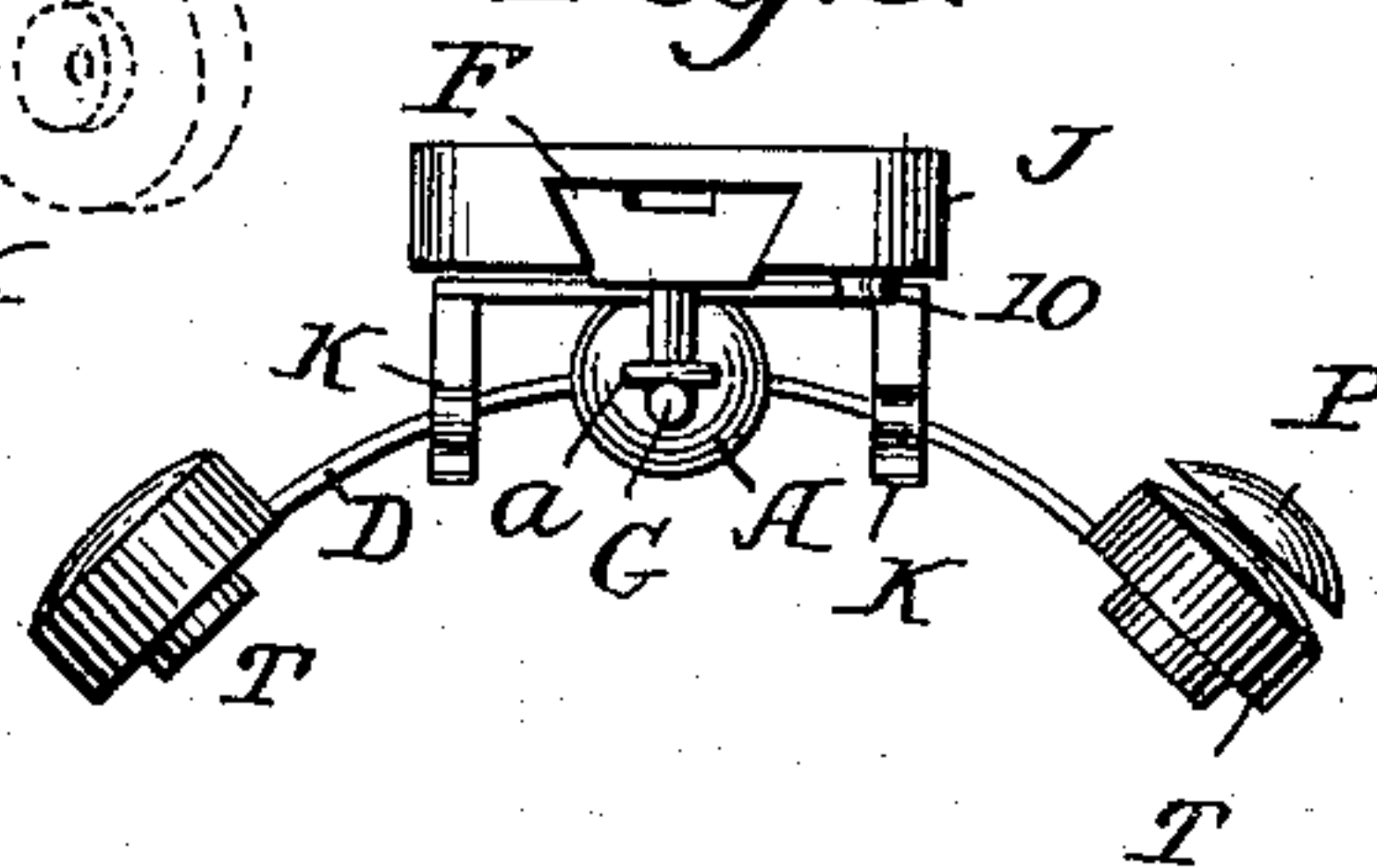
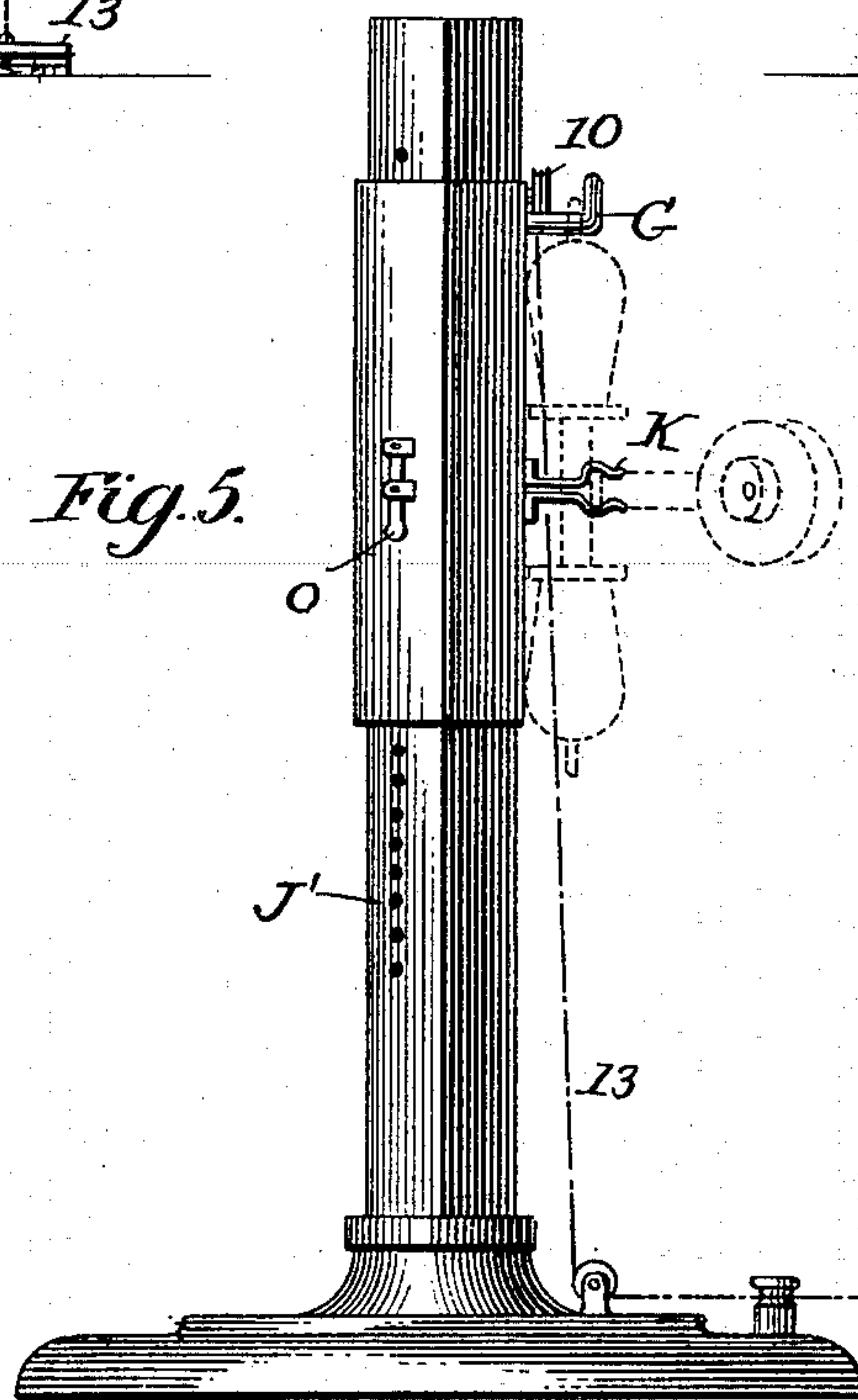


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANZ BURGER AND HENRY M. WILLIAMS, OF FORT WAYNE, INDIANA;
SAID BURGER ASSIGNOR OF ONE-HALF TO SAID WILLIAMS.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 615,344, dated December 6, 1898.

Application filed August 16, 1897. Serial No. 648,426. (No model.)

To all whom it may concern:

Be it known that we, FRANZ BURGER and HENRY M. WILLIAMS, citizens of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Telephones, of which the following is a specification.

This invention relates to telephone apparatus, and has for its object to provide improved and simplified means whereby communication may be readily had between a central office and a subscriber, and while the invention is adapted for many and various purposes it is intended more especially for use in hotels or other places where it is desirable to communicate with one point from a number of other points. It is also especially useful to take the place of the ordinary call-bell system; and to these ends the invention consists in the various features of construction and arrangement of circuits and parts, substantially as hereinafter more particularly pointed out.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of a telephone instrument adapted to be used either at the office or in the various rooms or stations. Figs. 2, 3, and 4 are various views showing a preferred means of supporting the telephone. Fig. 5 is a perspective view of a modified means, and Fig. 6 is a diagrammatic view illustrating an arrangement of circuits between the central office and one of the rooms or stations.

The telephone instrument is formed as a combined receiver, transmitter, and switch, all in one instrument. It comprises, as shown in Fig. 1 more particularly, a bar or rod B, of non-conducting material, having a handle A at one end, provided with a hook or eye a , while the other end is provided in the present instance with a slidable handle portion A', which is also provided with an eye a' . A portion of the rod B is perforated, as at B', to receive the wires, the ends of which will make flush contact-pieces on the face of the rod, cooperating with similar contact-pieces on the handle portion A', as more particularly described hereinafter. In the present instance only one handle portion is shown movable;

but in some instances it is desirable to make both handle portions movable, when the contacts will be duplicated at the other end of the rod. Connected to the rod B, between the handles, is a curved flat spring D, and near the ends of this spring are adjustable slides E, to which are attached telephones T T. These telephones may be ordinary magneto-telephones, as indicated in the drawings, or, if preferred, a battery-transmitter may be used, in which case of course the circuits would be arranged to suit; but it is preferred to use magneto-telephones and to dispense with any battery in the different rooms, there being simply a battery at the central office for the purpose of operating the bells in the manner hereinafter described.

For general use it is preferable to have the telephone hung in a position so that the operator can use it by simply placing his head in proper position, so that one of the telephones will be opposite his ear and the other adjacent to his mouth and so that his hands may be free, not being required to support the instrument while in use. To this end the telephone is shown supported on a sliding support F, which may be mounted in any proper position, as on a stationary board J, provided with a slot H, in which the sliding piece F moves, and which board may be attached to the wall, desk, or other convenient position or mounted on the standard J', as indicated in Fig. 5. The sliding piece F is shown as being provided with a hook G, to which the telephone is attached by its eye-piece, and in order to further support the telephone and hold it in its stationary position two spring-clamps K are provided, mounted on the sliding piece F and adapted to engage the curved flat spring D of the telephone, and by this means the telephone is securely held in its place, so that the pressure from the head against the telephone will not dislodge or disarrange the same. In order to adjust the telephone for different heights of the users, the sliding piece F is provided with some means whereby it can be secured in different positions, and in the present instance a rack M is placed in the slot H of the stationary board J, and passing through the sliding piece is a spring-pawl N, which engages with the teeth

of the rack, and a lever O operates to disengage the pawl, so that the instrument, with the sliding piece F, may be pushed up and down and adjusted to the proper height. It will thus be seen that the telephone can be adjusted in any desired position by adjusting the sliding piece up and down and by adjusting the telephone instruments on the spring D, although the latter will yield more or less on pressing the head against one of the instruments, so that an accurate adjustment of the telephone to the ear and in relation to the mouth can be attained without the aid of the hands of the operator.

Arranged in connection with the telephone and preferably attached to one of the telephone instruments is an electric bell P, and this is arranged in circuit with a bell at the central office and so as to be operated by a battery at that office, and there is shown a system of wiring, including three wires between the telephone and the office, whereby the apparatus may be readily and conveniently operated from a single battery. Moreover, in the arrangement shown, when the operator rings his bell at the central office his own bell will ring, and he will know thereby that the circuit is completed and that his signal is properly sent, and both bells will ring until the central-office operator moves his switch so that the telephone-circuit will be completed and the bell-circuit will be broken. The circuits are also arranged so that when the central-office operator desires to call a person in a certain room both bells will ring until the person called switches the current off, thereby showing the central-office operator that he has received the signal. If the person in the room does not want to be called from the central office, a switch, as Q, Fig. 6, may be provided, by means of which the circuit can be broken, so that his bell cannot ring, and then if perchance the central office attempts to call him the central-office bell will not ring, and the operator will know that the party does not desire to be called. Provision is also made whereby a second telephone may be connected with the telephone in the room, which can be placed upon a desk or bed or other convenient place, and there is shown such an instrument R, Fig. 6, connected by a switch S with the line, so that it can be included in or excluded from the circuit, as desired.

Referring to Fig. 6, the arrangement of circuits whereby the objects stated can be accomplished will be understood, and the parts of the instrument are shown diagrammatically, the handle portion A' being displayed to show the connections both in dotted and full lines, the normal position being shown in full lines, the handle being maintained in its position by its weight, which may be assisted by a spring, as a spiral spring V, Fig. 1, and the push-button C, mounted in the handle, being shown with its circuit open. In the private

room the telephone is preferably mounted as indicated in Figs. 2 to 5, and, as it is necessary in talking to raise the handle portion A' to complete the circuits hereinafter described, it is desirable to have some means in addition to the hand of the operator by which this may be done, and there is shown a foot-lever 12, connected to a cord or chain 13, which passes up over a pulley 10, adjustable in some of the holes 11 in the board J and connected to the eye a' of the slidable handle portion A', so that the handle portion may be moved up by pressing the foot-lever and will move down by its own weight or by the aid of the spring V.

At the central office the telephone is shown as being hung upon the switch, which is spring-controlled in one direction, but arranged so that the weight of the telephone will move the switch to close one of the circuits; but when the telephone is removed the switch will automatically move to close the other circuit.

Assuming the parts to be in the position shown in full lines, Fig. 6, and the person in the room desires to call the central office and the central-office instruments are in the position shown in full lines with the telephone hanging on the switch W, the circuit is traced as follows: Starting from the bell P wire 1 connects with the contact-piece 3 on the hollow rod B, and from there connects with the end of the wire 4 in the slidable handle A', and thence to the central office, including bell P', battery U, switch W, return-conductor 5 into the handle A', and terminating under the push-button C, which push-button is connected to the line 6, the branch 6^a of which when the parts are in the position shown is connected with the contact-piece 3 and by conductor 2 to the other side of the bell P, completing the circuit and including both bells in the same with the battery, so that when the push-button is pressed down, closing the circuit at this point, both bells will ring and continue to ring as long as the push-button is held or until the central-office operator removes his telephone from switch W. When this occurs, the spring w will automatically move the switch W from the conductor 5, and this will break the bell-circuit, stopping the ringing for the time being; but as soon as the switch W reaches the terminal of conductor 6 it will again close the circuit through both bells, notifying the operator that his call has been received. It will be seen that when the switch W is in the position shown in dotted lines, Fig. 6, the central-office operator can ring the subscriber's bell, the circuit being traced from the switch W through conductor 6 to the contact and conductor 2, to the bell P by conductor 1, to contact 3, conductor 4 to bell P' and battery U, and thence to switch W. In this condition the bell of the subscriber and in the central office will ring as long as the switch remains in this position or until the subscriber moves his slidable handle or oper-

ates the switch Q to cut out the circuit. If now the subscriber desires to communicate through the medium of the telephones, the slidable handle portion A' is moved either by hand or by the treadle or otherwise, so that it is in the position shown in dotted lines, Fig. 6, and the bell-circuits will be cut out and the telephones included. Tracing these circuits, starting from one of the telephones T, the line 7 reaches the contact-piece on the hollow rod and connects with the conductor 5, and thence leading to the central office passes by the branch conductor 8 to the telephone T' in the hand of the central-office operator, through the telephone back by branch conductor 9 to the conductor 6, thence by the branch 6^b to the conductor 6^c to the telephone T, and back by the conductor 15, which connects the two telephone instruments T, completing the circuit, and conversation may be carried on as long as the parts are retained in this position. When the conversation is finished, the operator releases the slidable handle portion A' and the central-office operator restores his instrument to the switch W and the circuits are in their normal position.

If the instrument R is to be used, the switch S is in the position indicated in full lines, including that in the circuit of the telephones T, and this portable instrument may be connected to the slidable handle portion A', so that it can be moved to its dotted position to include the speaking-circuit, it being understood that the calling-circuit does not extend to this portable instrument.

It will be seen by this system of apparatus and circuits that the operator on pressing the push-button will ring his own and the central-office bell and will know that the central-office bell is ringing if his own rings, and they will continue to ring until the central-office operator removes his telephone from the switch. This will temporarily stop the ringing of the telephones and automatically close the circuits, so that the telephones will again be rung independent of the operation of the push-button of the subscriber. These bells will continue to ring until the bell-circuit is broken by the subscriber moving his switch (in the form of a slidable handle) and closing the speaking-circuit. Then on releasing the slidable handle the bells will automatically ring, notifying the central office that the communication is closed, and on hanging up the central-office telephone the circuits will be restored to their normal condition ready for operation again.

From the above the general construction and arrangement as well as the operation of the instrument will be clearly understood by those skilled in the art, and the details of construction may be varied without departing from the principles of the invention.

It is to be observed that while in the drawings we have shown the circuits for a single subscriber and central-office connections

therefor the same general construction and arrangement of parts may be utilized in a manner well understood, so as to connect a number of subscribers with the central office. In so using a number of lines the usual switchboards with spring-jacks and annunciator-drops may be interposed in the usual way and the different subscribers' lines used in connection with a single central-office telephone. If, however, a large number of lines were used, it would be more practicable to use several central-office telephones, as is the common practice. Of course the particular arrangement of spring-jacks, annunciators, and telephones at the central office will depend largely upon the number of subscribers' or separate circuits centering at the office, and as all these appliances are old and their use well understood by those skilled in the art it is not deemed necessary to show any specific construction and arrangement of such devices, as they are not necessary in order to carry out the broad features of our invention, but are only means of adapting the invention to various circumstances in the usual way.

What is claimed is—

1. A telephone apparatus, comprising a bar, a slidable handle mounted on the bar, contacts controlled by said slidable handle, and a cross-piece supporting the telephone instruments, substantially as described.

2. A telephone apparatus, comprising a hollow bar, a slidable handle portion containing contacts mounted on the bar, a spring cross-piece secured to the bar, and telephone instruments mounted on the ends of the cross-piece, substantially as described.

3. A telephone apparatus, comprising a hollow bar, a slidable handle mounted on the bar, contacts between the handle and bar, a spring cross-piece mounted on the bar, telephone instruments adjustably mounted on the cross-piece, and a bell mounted on one of the instruments, substantially as described.

4. A telephone apparatus, comprising a bar having handles at each end provided with eyes, one of the handles being slidable on the bar, contacts controlled by the slidable handle, a spring cross-piece mounted on the bar, adjustable slides supporting the telephone instruments mounted on the cross-piece, and a bell mounted in connection with one of the instruments, substantially as described.

5. In a telephone apparatus, the combination with a slide and support therefor, of a hook mounted on the slide, clamps secured to the slide, and a telephone comprising a bar having an eye to fit the hook and a cross-piece to fit the clamps, substantially as described.

6. In a telephone apparatus, the combination with a slide adjustable in its support, a hook, and clamps mounted on the slide, of a telephone comprising a bar having eyes, a slidable handle on the bar, and a treadle con-

nected to the slidable handle for operating the same, substantially as described.

7. The combination with an adjustable slide, of a supporting-bar for the telephone
5 mounted on the slide, a slidable handle on said bar, a treadle, and adjustable means connecting the treadle with the slidable handle, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of 10 two subscribing witnesses.

FRANZ BURGER.

HENRY M. WILLIAMS.

Witnesses:

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CHR. PUPENBRINK.